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Notice of Allowability

Application No.

10/776,978

Examiner

Gene N Auduong

Applicant(s)

JOHNSON, MARK B.

Art Unit

2818

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed 2-10-2004.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☒ The drawings filed on 10 February 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

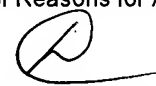
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


 Gene N Auduong
 Primary Examiner
 Art Unit: 2818

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

IN THE SPECIFICATION:

- Page 1 of the specification has been amended as in the attached page.

Allowable Subject Matter

2. Claims 1-28 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The prior art does not teach or fairly disclose a hybrid magnetoelectronic spin-based memory cell as claimed, comprising: an electron spin-based memory element situated on a silicon based substrate; the electron spin-based memory element including: i) a first ferromagnetic layer with a changeable magnetization state comprising permalloy and/or cobalt; ii) a second ferromagnetic layer with a non-changeable magnetization state also comprising permalloy and/or cobalt; iii) a base layer which is less than 1 micron in thickness and is situated between the first ferromagnetic layer and the second ferromagnetic layer the base layer comprising a conductive paramagnetic material or aluminum based material capable of carrying a spin polarized current; iv) a low transmission barrier also situated between the first ferromagnetic layer and the second ferromagnetic layer; a memory cell selector coupled to the

Art Unit: 2818

electron spin-based memory, the memory cell selector including a semiconductor based isolation element.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gene N Auduong whose telephone number is (571) 272-1773.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GA
May 25, 2004



Gene N Auduong
Primary Examiner
Art Unit 2818

Method of Making Hybrid Semiconductor – Magnetic Spin Based Memory

5

RELATED APPLICATION DATA

P The present invention claims priority to and is a continuation of application serial no. 10/100,210 filed March 18, 2002 entitled "Magnetoelectronic Memory Element With Inductively Coupled Write Wires," ^{now U.S. Patent 6,741,444} Application serial No. 10/100,210 is a continuation of an application serial no. 09/532,076 filed March 22, 2000 titled "Magnetoelectronic Memory Element With Isolation Element" (now U.S. Patent 6,388,916). The latter application serial no. 09/532,076 is in turn a divisional application of serial no. 08/806,028 filed February 24, 1997 entitled "Hybrid Hall Effect Memory Device & Method of Operation," now U.S. Patent No. 6,064,083. 15 Serial no. 08/806,028 is a continuation-in-part of serial no. 08/643,805, filed May 6, 1996 titled "Hybrid Hall Effect Device and Method of Operation," (now U.S. Patent No. 5,652,445), which in turn is a continuation-in-part of an application serial no. 08/493,815, filed June 21, 1995 titled "Magnetic Spin Transistor Hybrid Circuit Element," (now U.S. Patent No. 5,565,695); and said serial no. 08/806,028 is also a 20 continuation-in-part of an application serial no. 08/425,884, filed April 21, 1995 titled "Magnetic Spin Transistor, Logic Gate & Method of Operation," (now U.S. Patent No. 5,629,549); ~~and an application serial no. 08/643,804 filed May 6, 1996~~ ~~titled "Magnetic Spin Injected Field Effect Transistor and Method of Operation,"~~ ~~(now U.S. Patent No. 5,654,566);~~ and an application serial no. 08/643,804 filed May 6, 1996 titled "Magnetic Spin Injected Field Effect Transistor and Method of 25 Operation," (now U.S. Patent No. 5,654,566).

The above applications and materials are expressly incorporated by reference herein.